

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) [A] An industrial automation control system established through a network for controlling and monitoring of a plant, the control system comprising:

a plurality of system component nodes each having a communication section for generating a unique global address by the system component node itself upon connection to the network, and for transmitting the generated global address, attribute information of the system component node and installation position information of the system component node, to the network; and

a management node for monitoring and operating the system component nodes through the network and managing control of the whole control system, wherein

the management node includes:

a communication section for performing communication through the network;

a storage section for storing definition information of the system component nodes;

a display section for displaying an operation and monitor screen;

a definition information generation section for generating the definition information based on the global address, the attribute information and the position information which are acquired through the network, and for storing the definition information in the storage section;

a screen generation section for making the display section display the operation and monitor screen of the system component nodes from the definition information in the storage section; and

a control function providing section for reading information defining an operation of the system component node from the storage section, and for outputting the read information to the communication section;

wherein the plurality of system component nodes include at least one controller, and at least one of a sensor and ~~[[an]]~~ at least one actuator where the controller operates the actuator based on data from the sensor.

2. (Canceled)

3. (Currently Amended) The industrial automation control system as claimed in claim 1, wherein the definition information includes the global address, an installation position, a tag, a control function and a configuration of the operation and monitor screen of the system component node.

4. (Currently Amended) The industrial automation control system as claimed in claim 1, wherein the definition information generation section has an attribute information determination section for determining validity of the attribute information.

5. (Currently Amended) The industrial automation control system as claimed in claim 1, wherein the attribute information includes at least one of a type, a manufacturer, a model and a serial number of the system component node.

6. (Currently Amended) The industrial automation control system as claimed in claim 1, wherein each of the communication section of the system component node and the communication section of the management node has an address generation section for generating a unique global address.

7. (Currently Amended) The industrial automation control system as claimed in claim 1, wherein each of the communication section of the system component node and the communication section of the management node performs packet communication.

8. (Currently Amended) The industrial automation control system as claimed in claim 7, wherein the communication section has an authentication section for adding authentication data to a header of a packet, and determining validity of the received packet according to the authentication data added to the packet.

9. (Currently Amended) The industrial automation control system as claimed in claim 7, wherein the communication section has a cryptograph processing section for encrypting a packet.

10. (Currently Amended) The industrial automation control system as claimed in claim 7, wherein the communication section of the system component node multicasts a packet including the generated global address as a source address to all of the management node and the system component nodes connected to the system, and the communication section of the management node receives the multicasted packet and sends a response to the received packet to the system component node.

11. (Currently Amended) The industrial automation control system as claimed in claim 6, wherein Internet protocol specification IPv6 is used as a communication protocol for connecting to the network.

12. (Currently Amended) The industrial automation control system as claimed in claim 1, wherein the system component node has a position detection section for detecting the installation position.

13. (Currently Amended) The industrial automation control system as claimed in claim 12, wherein the position detection section detects the position using radio waves or ultrasonic waves.

14. (Currently Amended) The industrial automation control system as claimed in claim 1, wherein the network has a switching hub, and the system component node is connected to the switching hub.

15. (Currently Amended) ~~The A control system as claimed in claim 1~~
established through a network, the control system comprising:
a plurality of system component nodes each having a communication section for
generating a unique global address by the system component node itself upon
connection to the network, and for transmitting the generated global address, attribute
information of the system component node and installation position information of the
system component node, to the network; and

a management node for monitoring and operating the system component nodes through the network and managing control of the whole control system, wherein

the management node includes:

a communication section for performing communication through the network;

a storage section for storing definition information of the system component nodes;

a display section for displaying an operation and monitor screen;

a definition information generation section for generating the definition information based on the global address, the attribute information and the position information which are acquired through the network, and for storing the definition information in the storage section;

a screen generation section for making the display section display the operation and monitor screen of the system component nodes from the definition information in the storage section; and

a control function providing section for reading information defining an operation of the system component node from the storage section, and for outputting the read information to the communication section,

wherein the plurality of system component nodes include at least one controller, and at least one of a sensor and an actuator,

wherein the controller has a self-learning section for learning more appropriate control function by performing transmission and reception to and from the sensor and the actuator, and transmits the learned control function to the management node, and

the definition information generation section of the management node generates the definition information according to the control function from the controller.

16. (Currently Amended) The industrial automation control system as claimed in claim 1, wherein the management node performs communication with the system component node through the network.